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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,297	06/22/2007	Sergej Lopatin	LOPA3011/EJD	9108
23364 7590 04/02/2009 BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314-1176				
EXAMINER				
SAINT SURIN, JACQUES M				
ART UNIT		PAPER NUMBER		
2856				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/591,297

**Applicant(s)**

LOPATIN ET AL.

**Examiner**

J M. SAINT SURIN

**Art Unit**

2856

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2006 and 05 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date \_\_\_\_\_
- 6) ☐ Other: \_\_\_\_\_
- 7) ☐ Notices of Informal Patent Application
- 8) ☐ Paper No(s)/Mail Date 08/06, 12/08

## DETAILED ACTION

### *Drawings*

1. The drawings filed on 08/31/06 are accepted by the examiner.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 14, 16-18, 23 and 25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al. (US Patent 5,813,280).

Regarding claim 14, Johnson et al. discloses an apparatus for determining and/or monitoring at least one physical or chemical, process variable of a medium, having:

at least one oscillatable unit (col. 4, lines 42-45) which produces, and/or receives, mechanical oscillations;

at least one tuning unit (100) whose stiffness is variable and which is embodied in such a manner and connected in such a manner with said oscillatable unit (col. 4, lines 60-64), or is a component of said oscillatable unit in such a manner, that at least the resonance frequency of said oscillatable unit is changeable via said at least one tuning unit (col. 5, lines 1-7). See also col. 4, lines 32-43, col. 5, lines 1-7 and col. 8, lines 51-61).

Regarding claim 16, Johnson et al. discloses the apparatus as claimed in claim 14, wherein: said tuning unit comprises a magnetostrictive material whose stiffness is changeable at least by an applied magnetic field (col. 7, lines 32-37).

Regarding claims 17-18, Johnson et al. discloses the apparatus as claimed in claim 14, further having: a control unit which controls said tuning unit electrically and wherein: said control unit is embodied in such a manner that it tunes the resonance frequency of said oscillatable unit as a function of the oscillation amplitude and/or oscillation frequency of the mechanical oscillations produced and/or received by said oscillatable unit (see: col. 10, lines 52-57).

Regarding claim 23, Johnson et al. in view of Katani discloses mounting surface 103 can take any form or shape to meet the needs of a particular application; for example, pins, rivets, bolts, adhesives, and the like may be used; mounting surfaces 103 can be adapted to any of these applications. A key advantage of the acoustic resonator in accordance with the present invention is that mounting surfaces 103 are located sufficiently far from central section 101 such that mechanical changes caused by coupling surfaces 103 to another object do not affect resonant frequencies in central section 101. This allows mounting surfaces 103 to be coupled to sources of stress, strain, and force of any variety without affecting the accuracy or resolution of force measurements (col. 15, lines 25-38 of Johnson).

Regarding claim 25, Johnson et al. discloses the apparatus as claimed in claim 14, wherein: said oscillatable unit includes at least one measuring tube of a measurement pickup of vibration-type inserted into the course of a pipeline (col. 5,

lines 8-13 and col. 11, lines 1-18 and 27-36) especially a Coriolis mass flow or a Coriolis mass flow/density meter.

Regarding claim 26, it is similar in scope with claim 14 and therefore, it is rejected for the reasons set forth for that claim.

4. Claims 14-15, 17-18 and 21-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Umezawa (US Patent 4,740,726).

Regarding claims 14 and 26, Umezawa discloses an apparatus (col. 1, lines 7-11) for determining and/or monitoring at least one physical or chemical, process variable of a medium (col. 1, line 8), having:

at least one oscillatable unit (col. 3, lines 33-36) which produces, and/or receives, mechanical oscillations;

at least one tuning unit (8b) whose stiffness is variable and which is embodied in such a manner and connected in such a manner with said oscillatable unit (50) or is a component of said oscillatable unit in such a manner, that at least the resonance frequency of said oscillatable unit is changeable via said at least one tuning unit (col. 3, lines 53-62, col. 5, lines 20-24).

Regarding claim 26, it is similar in scope with claim 14 and therefore, it is rejected for the reasons set forth for that claim.

Regarding claims 15 and 21, Umezawa discloses vibrating piezo-electric device 8b, the receiving piezo-electric device 8a, an input circuit 30, an amplifier 32, and an output circuit 36 constitute an oscillation circuit. In the same manner as the circuit of FIG. 4, the inner vibration member 22 vibrates at a frequency determined in

accordance with the eigenfrequency of the folded cantilever formed by the detecting pipe 20 and the inner vibration member 22. Output of the oscillation circuit, i.e., output of the amplifier 32 is inputted to a frequency comparator 54. In the frequency comparator 54, a frequency of the output signal from the oscillation circuit is compared with a reference frequency from a reference frequency oscillator 56. When the touching of the granular material to the detecting pipe 20 changes the frequency of the scillation circuit, a frequency comparator 54 issues an output which drives a relay 42 for switching a contact 46 (col. 3, lines 33-45) .

Regarding claims 17-18, Umezawa discloses the apparatus as claimed in claim 14, further having: a control unit which controls said tuning unit electrically and wherein: said control unit is embodied in such a manner that it tunes the resonance frequency of said oscillatable unit as a function of the oscillation amplitude and/or oscillation frequency of the mechanical oscillations produced and/or received by said oscillatable unit (see: col. 3, lines 63-68).

Regarding claims 22 and 24, Umezawa discloses the apparatus as claimed in claim 14, wherein: at least one front-side mass (22) and one rear-side mass (24) are provided in said oscillatable unit and at least one sending/receiving piezo (8a, 8b) is provided between the two masses (22, 24); at least one tuning unit (col. 2, lines 55-60) is part of one of the two masses; and the resonance frequency of said oscillatable unit lies in the ultrasonic range (col. 2, lines 48-68).

Regarding claim 23, Umezawa discloses the apparatus as claimed in claim 21, wherein: at least one matching layer is provided in said oscillatable unit for coupling to the medium (col. 4, lines 21-22).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 19-20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Johnson et al. (US Patent 5,813,280) or Umezawa (US Patent 4,740,726) in view of Onishi et al. (US Patent 6,684,716).

Regarding claims 19-20, Johnson or Umezawa discloses the claimed invention except for the limitations of wherein at least one inner oscillatory rod and an outer oscillatory rod are provided in said oscillatable unit; said outer oscillatory rod surrounds said inner oscillatory rod coaxially; said outer oscillatory rod and said inner oscillatory rod are coupled together; and at least one tuning unit is coupled at least with one of said oscillatory rods. Onishi et al. discloses a flow tube (i.e., conduit) 3, and a pair of counter rods 4b, 4b. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Johnson or Umezawa the counter rods of Onishi because they are arranged on each side of the flow tube 3 at parallel with a space wherein the flow tube and the counter rods are designed to vibrate in opposite phase by means of vibration generators thereby facilitating a reliable monitoring device.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (US Patent 5,813,280) or Umezawa (US Patent 4,740,726) in view of Drahm (US Patent 5,531,126).

Regarding claim 25, Johnson discloses the claimed invention except for the limitations of a Coriolis mass flow or a Coriolis mass flow/density meter. Drahm discloses a straight measuring tube as a vibrating body through which flows a fluid to be measured (col. 1, lines 6-9). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Johnson or Umezawa the measuring tube of Drahm because it includes a mass flow sensor working on the Coriolis principle wherein the viscosity of the fluid can be determined from the vibration amplitudes of measuring tube and dummy tube in a reliable manner.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J M. SAINT SURIN whose telephone number is (571)272-2206. The examiner can normally be reached on Mondays to Fridays between 9:30 A.M and 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron L. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jacques M SAINT SURIN/  
Examiner, Art Unit 2856